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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,293	12/22/2005	Peter W. Green	GB02 0136 US	3260

24738 7590 06/23/2008

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
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EXAMINER	
STARK, JARRETT J	

ART UNIT	PAPER NUMBER
2823	

MAIL DATE	DELIVERY MODE
06/23/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/562,293
Filing Date: December 22, 2005
Appellant(s): GREEN, PETER W.

Kenneth D. Springer
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 4/18/2008 appealing from the Office action mailed 7/10/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,501,094 B1 Yamazaki et al. 12-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 24, 25, 27 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamazaki et al (US 6,501,094).

Pertaining to claim 24, Yamazaki teaches a TFT comprising:

a gate **100** disposed on a substrate, the gate having side edges including towards one another to reach a tip having a radius of a few nanometers,

a gate insulating layer **105** disposed on the gate;

a channel region disposed on the gate insulating layer;

a source electrode **116** overlying a first side edge of the gate, and

a drain electrode **117** overlying a second side edge of the gate.

Pertaining to claim 25, Yamazaki teaches the TFT of claim 24, further comprising a layer of doped semiconductor material **113 and 114** overlying the channel region.

Pertaining to claim 27, Yamazaki teaches the TFT of claim 24, further comprising an insulating material **407** disposed between the gate and the substrate. **See Figure 4C**

Pertaining to claim 28, Yamazaki teaches a TFT according to claim 24 wherein the channel region comprises intrinsic amorphous silicon **107**.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki as applied to claims 16-19 and 24 above.

Pertaining to claim 26, Yamazaki teaches the TFT of claims 16 and 24, but fails to specifically detail the length of the channel region, specifically the length being 20-40 nanometers. However, given the teaching of the references, it would have been obvious to determine the optimum thickness, temperature as well as condition of delivery of the layers involved. See In re Aller, Lacey and Hall (10 USPQ 233-237) "It is not inventive to discover optimum or workable ranges by routine experimentation."

Note that the specification contains no disclosure of either the critical nature of the claimed ranges or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff, 919 f.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Any differences in the claimed invention and the prior art may be expected to result in some differences in properties. The issue is whether the properties differ to such an extent that the difference is really unexpected. In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Appellants have the burden of explaining the data in any declaration they proffer as evidence of non-obviousness. Ex parte Ishizaka, 24 USPQ2d 1621, 1624 (Bd. Pat. App. & Inter. 1992).

An Affidavit or declaration under 37 CFR 1.132 must compare the claimed subject matter with the closest prior art to be effective to rebut a prima facie case of obviousness. In re Burckel, 592 F.2d 1175, 201 USPQ 67 (CCPA 1979).

(10) Response to Argument

Regarding Claims 24, 25, 27 and 28 are rejected under 35 U.S.C. 102(b):

The Appellants arguments state: "Applicant respectfully submits that Yamazaki does not disclose any gate having side edges inclined towards one another to reach a tip having a radius of a few nanometers."

In response, it is noted by the Examiner that the Appellants do not properly or clearly define how "a few nanometers" is intended to be interpreted, nor is it clearly disclosed where or how the radius. (Note: radius is not labeled on any of the Appellant's figures.) The only description of the limitation "*radius of a few nanometers*" found in the Appellant's Disclosure states:

"*In accordance with the invention, the etching of the base layer structure may be carried out such that a tip is formed in the apex region, having a radius of a few nanometres. The etching may produce side edges that are inclined at angles of less than 90 degrees*." -- Appellant's Specification, Page 3 lines 12-15

"*The triangular sectioned structure 4 has a rectangular base 11 dimension of 1 to 2 microns, with opposed, inclined side edges 4a, 4b which extend to an apex region 12 that includes tip 13 of a radius of a few nanometres. The angle subtended between the inclined side edges 4a, 4b is less than 90.degree. and typically in a range of 30.degree. to 60.degree*." -- Appellant's Specification, Page 6 lines 8-12

From the Appellants disclosure there is no explicit teachings of specific range of values for the radius, which the Appellants regard as the invention. Thus the limitations have been left open to interpretation. Yamazaki explicitly states "*A gate electrode 100 is formed in that manner. In this step, the aluminum oxide film formed through anodic oxidation shall have an overall grown length of 100 nm*." This statement implicitly implies that the radius of the tip of the gate electrode has to be less than 50 nm, since the sidewalls are shown in have a incline forming a tip. This tip shown by Yamazaki,

implicitly has a tip with a radius of 50 to 0 nm which can be considered "a few nanometeters."

Additionally it is argued by the Appellants, that Yamasaki et al. can not disclose "a radius of a few nanometers" due to conclusions obtained from viewing the figures of Yamazaki et al.. The conclusions regarding the exact sizes and thicknesses of the various layer disclosed by the figures of Yamazaki can not be obtained form merely estimating sizes and thickness by comparison of the various layers found in the drawing. The figures are not drawn to an exact scale; therefore these conclusions presented by the Appellants are merely speculative.

As presented in the previous Office Actions, Yamazaki Figure 15D show a thin film transistor with a gate side edges inclined towards one another to reach *a* tip (See figure provided below).

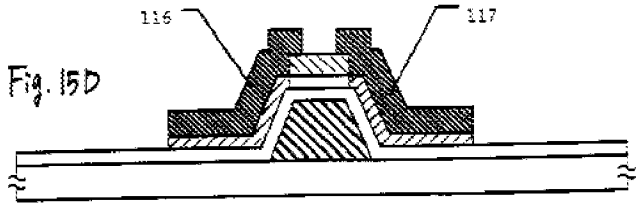


Fig. 15D

It is further noted the that the Applicants own Figure 5 and page 7 of the specification disclose a tip can be blunted or sharp. Yamazaki Figure 15D clearly depicts the "blunted" tip as described by the Applicants figure 5 shown below.

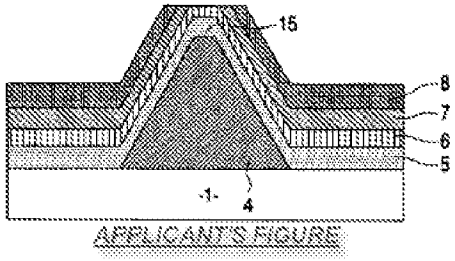
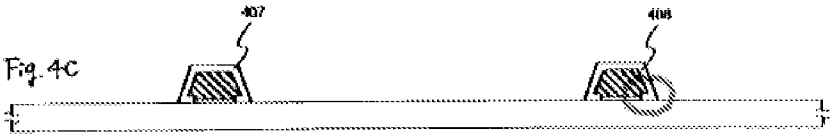


Fig.5

Regarding the arguments directed to claim 27, wherein the Appellants argue that Yamazaki does not disclose the limitation of "an insulating material disposed between the gate and the substrate." As presented in the previous Office Actions, Yamazaki clearly depicts this limitation in figure 4c reproduced below. The specifics of the limitation are circled by the Examiner for clarity. Insulating layer 408 of figure 4c is shown to be disposed between the gate and the substrate



Furthermore, Figure 1c shows an insulating layer 105 being formed by anodic oxidation ALL around the gate electrode 100.

Regarding claims 25 and 28, Appellants argue the claims are allowable, as they are dependent from the above argued claims 24 and 27. Therefore the response to the argument is the same as presented above.

Regarding Claim 26 is rejected under 35 U.S.C. 103(a)

It is argued by the Appellants, that Yamasaki et al. can not disclose a channel region in the range of 20-40 nanometers, because "Yamazaki teaches a gate having a flat, plateau-like top having a width of 200-300 nanometers."

This argument is traversed by the Examiner, because no where in the reference does Yamazaki state that the structure has a "width of 200-300 nanometers." This width argued by the Appellants is merely speculative based upon conclusions obtained

from viewing the figures of Yamazaki et al.. The conclusions regarding the exact sizes and thicknesses of the various layer disclosed by the figures of Yamazaki can not be obtained form merely estimating sizes and thickness by comparison of the various layers found in the drawing. The figures are not drawn to an exact scale; therefore these conclusions presented by the Appellants are merely speculative, and thus can not support the argument.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Jarrett J Stark/
Examiner, Art Unit 2823

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